

Work Order ID 139833

December 09, 2015 1:39:42 PM

139833

Page 1

Item ID: D5162-041

Accept

N900040100

Setup Start

NS1

Revision ID:

Stop

NS2

Item Name: Seat Structure Assembly

Start Date: 12/9/2015 Start Qty: 1.00

1

Cust Item ID:

Required Date: 12/23/2015 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:

Process Plan:

SH

Date:

20151209

Tooling:

Date:

Run Start

NR1

QC:

Date:

SPC (Y/N):

Date:

Stop

NR2

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr**Revision Nbr**

D3016.

(DEO) A1

D3017

C

D5162

A

D5189

A

105

Pick Kit

0.00

105

Packaging

Memo

0.00

Packaging

1 Q 15/12/16

110

Weld per dwg A/R 4130 rod Batch: *112725* 0.00***110***

Large Fab

Memo

0.00

Large Fab

FABRICATE D5189-041 AS PER DWG AND BY USING DT8622.

DO NOT OPEN HOLES TO SIZE, IT WILL BE OPEN UPON FINAL ASSEMBLY.

ONLY WELD STUD D4667-041 TO TUBE. END CAP WILL BE WELDED AFTER OPENING HOLES IN TUBE.

1 Q 15/12/16

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval		
Description Work Order Deviation				Disposition					

Root Cause				FAULT CATEGORY							
Environment	☐	No Re-verification	☐	Pressure/Forced	☐	Temperature/Cure	☐	Power Loss/Surge	☐	Positioned Wrong	☐
Design	☐	Operator	☐	Bending	☐	Set-up	☐	Folio/Program	☐	Outside Dimensions	☐
Doc/Data	☐	Offset/Setup	☐	Centre Not Concentric	☐	BOM/Route	☐	Grain	☐	Over/Under tolerance	☐
Equip/Tooling	☐	Supplier	☐	Cracks	☐	Broken/Damage/Defect	☐	Weld	☐	Part Incorrect	☐
Handling/Pre	☐	Training	☐	Crimp/Kink/Ripple/Wave	☐	Inspection Incomplete/Unqualified	☐	Wrong Stock Pulled	☐	Part Lost/Missing	☐
Material	☐	Use for Testing	☐	Cuffs	☐	Contamination	☐	Out of Sequence	☐	Part Moved	☐
Internal Transport	☐	Poor Information	☐	Crushing	☐	Countersink	☐	Off-set	☐	Drawing	☐
Tribal Knowledge	☐	Rushing	☐	Heat Treat	☐	Cut Too Short	☐	Mislabeled	☐	Finish	☐
LOA	☐	Product Improvement	☐	Wave/Twist in Tube	☐	Instructions Incomplete/Unclear	☐	Fit/Function	☐	Misread	☐
Substation	☐	Process Improvement	☐	Marks/Chatter	☐	Drill Holes	☐	Misaligned/off center	☐	Turning Sequence	☐
Past Expiry Date	☐	Manufacturing Process	☐	OTHER : _____							
Misidentified	☐	Past Due	☐								

Work Order ID 139833

December 09, 2015 1:39:42 PM

139833

Page 2

Item ID: D5162-041

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Seat Structure Assembly

Start Date: 12/9/2015 Start Qty: 1.00

1

Cust Item ID:

Required Date: 12/23/2015 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

120

Weld per dwg A/R 4130 rod Batch: 4127725 0.00***120***

Large Fab

Memo

0.00

Large Fab

FABRICATE (2) D3016-041 AS PER DWG.

WELD ASSEMBLY USING DT8597 WELD JIG.

***DO NOT DRILL HOLES AS THEY WILL BE TRANSFER DRILL AT
FUTHER STEP.******DO NOT WELD GUSSETS AND BRACKET THEY WILL BE WELDED
AT A FUTHER STEP.***1 EL 15-12-18

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
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Design	☐	Operator	☐	Bending	☐	Set-up	☐	Folio/Program	☐	Outside Dimensions	☐
Doc/Data	☐	Offset/Setup	☐	Centre Not Concentric	☐	BOM/Route	☐	Grain	☐	Over/Under tolerance	☐
Equip/Tooling	☐	Supplier	☐	Cracks	☐	Broken/Damage/Defect	☐	Weld	☐	Part Incorrect	☐
Handling/Pre	☐	Training	☐	Crimp/Kink/Ripple/Wave	☐	Inspection Incomplete/Unqualified	☐	Wrong Stock Pulled	☐	Part Lost/Missing	☐
Material	☐	Use for Testing	☐	Cuffs	☐	Contamination	☐	Out of Sequence	☐	Part Moved	☐
Internal Transport	☐	Poor Information	☐	Crushing	☐	Countersink	☐	Off-set	☐	Drawing	☐
Tribal Knowledge	☐	Rushing	☐	Heat Treat	☐	Cut Too Short	☐	Mislabeled	☐	Finish	☐
LOA	☐	Product Improvement	☐	Wave/Twist in Tube	☐	Instructions Incomplete/Unclear	☐	Fit/Function	☐	Misread	☐
Substation	☐	Process Improvement	☐	Marks/Chatter	☐	Drill Holes	☐	Misaligned/off center	☐	Turning Sequence	☐
Past Expiry Date	☐	Manufacturing Process	☐	OTHER :							
Misidentified	☐	Past Due	☐								

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

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Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
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Equip/Tooling	☐	Supplier	☐	Cracks	☐	Broken/Damage/Defect	☐	Weld	☐	Part Incorrect	☐
Handling/Pre	☐	Training	☐	Crimp/Kink/Ripple/Wave	☐	Inspection Incomplete/Unqualified	☐	Wrong Stock Pulled	☐	Part Lost/Missing	☐
Material	☐	Use for Testing	☐	Cuffs	☐	Contamination	☐	Out of Sequence	☐	Part Moved	☐
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Tribal Knowledge	☐	Rushing	☐	Heat Treat	☐	Cut Too Short	☐	Mislabeled	☐	Finish	☐
LOA	☐	Product Improvement	☐	Wave/Twist in Tube	☐	Instructions Incomplete/Unclear	☐	Fit/Function	☐	Misread	☐
Substation	☐	Process Improvement	☐	Marks/Chatter	☐	Drill Holes	☐	Misaligned/off center	☐	Turning Sequence	☐
Past Expiry Date	☐	Manufacturing Process	☐	OTHER :							
Misidentified	☐	Past Due	☐								

Work Order ID 139833***139833***

Page 4

December 09, 2015 1:39:42 PM

Item ID: D5162-041 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
Item Name: Seat Structure Assembly
Start Date: 12/9/2015 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 12/23/2015 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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150

0.00

150

Large Fab

Large Fab

Memo

0.00

1- BOLT SEAT FRAME TO ASSEMBLY PLATE DT8624.

2- TRANSFER DRILL D5189-041 TO D3016-041 AS PER DWG USING #30
DRILL AND CLECO THEN DRILL TO FINISH SIZE.

3- TRANSFER DRILL SEAT PAN TO D5189-041 AND 3016-041.

4- TRASFER DRILL SEAT AND D3016-041 TO D3017-041 USING
DT AND USING TOOL TO ACHIEVE DESIRED ANGLE ON
BACK REST.1 Q 15/12/16

155

Weld per dwg A/R 4130 rod Batch: 14/27925 0.00***155***

Large Fab

Large Fab

Memo

0.00

ARMREST:

1- ASSEMBLE AND TRANSFER DRILL D5189-043 TO D3017-041.
OPEN HOLES TO FINISH SIZE AS PER DWG

STRUT:

1-

SEAT BRACE:

1- USE DT10132 AND DT10133 TO TRANSFER DRILL HOLES IN SEAT
PAN AND SEAT BRACE.1 Q 15/12/16

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval		
Description Work Order Deviation				Disposition					

Root Cause				FAULT CATEGORY			
Environment	☐	No Re-verification	☐	Pressure/Forced	☐	Temperature/Cure	☐
Design	☐	Operator	☐	Bending	☐	Set-up	☐
Doc/Data	☐	Offset/Setup	☐	Centre Not Concentric	☐	BOM/Route	☐
Equip/Tooling	☐	Supplier	☐	Cracks	☐	Broken/Damage/Defect	☐
Handling/Pre	☐	Training	☐	Crimp/Kink/Ripple/Wave	☐	Inspection Incomplete/Unqualified	☐
Material	☐	Use for Testing	☐	Cuffs	☐	Contamination	☐
Internal Transport	☐	Poor Information	☐	Crushing	☐	Countersink	☐
Tribal Knowledge	☐	Rushing	☐	Heat Treat	☐	Cut Too Short	☐
LOA	☐	Product Improvement	☐	Wave/Twist in Tube	☐	Instructions Incomplete/Unclear	☐
Substation	☐	Process Improvement	☐	Marks/Chatter	☐	Drill Holes	☐
Past Expiry Date	☐	Manufacturing Process	☐	OTHER : _____			
Misidentified	☐	Past Due	☐				

Work Order ID 139833

139833

Page 5

December 09, 2015 1:39:42 PM

Item ID: D5162-041 Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: Stop ***NS2***
 Item Name: Seat Structure Assembly
 Start Date: 12/9/2015 Start Qty: 1.00 ***1*** Cust Item ID:
 Required Date: 12/23/2015 Req'd Qty: 1.00 ***1*** Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
160	QC5- Inspect part completeness to step on W/O	0.00							
160									DAS
QC	Memo	0.00							9
Quality Control									9-89
165	Weld per dwg A/R 4130 rod Batch: <u>M127925</u>	0.00							
165									
Large Fab	Memo	0.00							
Large Fab	SEAT FRAME: 1- WELD D3016-13 BRACKET, D3016-15 GUSSET AND D3016-17 GUSSET AND PER DWG 2- LAST STEP IS TO FINISH WELDING ALL WELDS AS PER DWG (SEAT AND BACK FRAME)								
170	QC9- Inspect visual per QSI004- Fusion Welds	0.00							
170									
QC	Memo	0.00							
Quality Control									

① 15-12-16

1 EL 15-12-16

① 15-12-17 PP

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval		
Description Work Order Deviation				Disposition					
Root Cause		FAULT CATEGORY							
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐				
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐				
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐				
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐				
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐				
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐				
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐				
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐				
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐				
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐				
Past Expiry Date ☐	Manufacturing Process ☐	OTHER :							
Misidentified ☐	Past Due ☐								

Work Order ID 139833

December 09, 2015 1:39:42 PM

139833

Item ID: D5162-041

Accept

N900040100

Setup Start

***NS**

Revision ID:

Stop

***NS**

Item Name: Seat Structure Assembly

Start Date: 12/9/2015 Start Qty: 1.00

1

Cust Item ID:

Required Date: 12/23/2015 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:

Process Plan: _____

Date: _____

Tooling: _____

Date: _____

Run Start

***NF**

QC: _____

Date: _____

SPC (Y/N): _____

Date: _____

Stop

***NF**Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
Number

175

QC5- Inspect part completeness to step on W/O

0.00

175

QC

Memo

0.00

Quality Control

① 15-12-16
DAS
9
9-89

180

Chemical Conversion Coat per QSI005 4.1

0.00

180

HandFinish

Memo

0.00

Hand Finishing

CHEMICAL CONVERSION SEAT PANEL D3022-1 AND BACK PANEL
D3023-1 AS PER DWG1 15-12-16
JH

190

QC7-Inspect Chemical Conversion Coat

0.00

190

QC

Memo

0.00

Quality Control

FX
DAS
36
9-89
15/12/17

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval Completed By _____ Lead hand / Supervisor Approval Verification _____ QC / QA Coordinator Approval _____		
Description Work Order Deviation				Disposition					
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐							
		OTHER : ☐							

Work Order ID 139833

December 09, 2015 1:39:42 PM

139833

Page 7

Item ID: D5162-041 Accept ***N900040100*** Setup Start ***NS1***
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 Start Date: 12/9/2015 Start Qty: 1.00 ***1*** Cust Item ID:
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Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
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Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
200		0.00							
200									
Small Fab	Memo	0.00							
Small Fab	(TO FABRICATE D5162-051) ASSEMBLE D3023-1 PANEL TO D3017-041 BACK FRAME AS PER DWG D5162-051								
210	QC5- Inspect part completeness to step on W/O	0.00							
210									
QC	Memo	0.00							
Quality Control									
220	Grey Sandtex(Ref:4.3.5.6) per QSI005 4.3	0.00							
220									
Powdercoat	Memo	0.00							
Powder Coating	POWDER COAT ALL INDIVIDUAL PARTS								
	START TIME: 10:15								
	OVEN TEMPERATURE: 300°								
	FINISH TIME: 10:45								

DAS
36
9-89

DAS
34
9-89

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging Supplier ☐ Engineering ☐ Quality ☐ Other ☐							
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval				
Description Work Order Deviation				Disposition							
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐		☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due		FAULT CATEGORY ☐ Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter		☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes		☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center		☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence	
OTHER : _____											

Work Order ID 139833

December 09, 2015 1:39:42 PM

139833

Page 8

Item ID: D5162-041 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
Item Name: Seat Structure Assembly
Start Date: 12/9/2015 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 12/23/2015 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: Date: Tooling: Date: Run Start ***NR1***
QC: Date: SPC (Y/N): Date: Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
230 *230* QC Quality Control	QC3- Inspect Part Finish Memo	0.00 0.00				<u>1X</u>			<u>15/12/18</u> DAS 36 9-89
240 *240* Small Fab Small Fab	Memo ASSEMBLE AS PER DWG	0.00 0.00				<u>1X</u>			<u>15/12/18</u> DAS 36 9-89
250 *250* QC Quality Control	QC5- Inspect part completeness to step on W/O Memo	0.00 0.00				<u>1</u>			<u>DEC 20 2015</u> DAS 30 9-89

Work Order ID 139833

December 09, 2015 1:39:42 PM

139833

Page 9

Item ID: D5162-041 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
Item Name: Seat Structure Assembly
Start Date: 12/9/2015 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 12/23/2015 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
260	Identify as per dwg & Stock Location: <u>GA</u>	0.00							
260									
Packaging	Memo	0.00				<u>1X</u>			<u>15/12/2015</u>
Packaging									
270	QC21- Final Inspection - Work Order Release	0.00							
270									
QC	Memo	0.00				<u>MCS</u>			<u>DEC 22 2015</u>
Quality Control									

Signature 20151222

Picklist Print

December 09, 2015 1:39:52 PM

Page 1

Work Order ID: 139833

139833

Parent Item: D5162-041

D5162-041

Parent Item Name: Seat Structure Assembly

Start Date: 12/9/2015

Required Date: 12/23/2015

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP REV:A 14.11.05 NEW ISSUE DD VERF:JLM IPP
REV:B 15-02-06 AS PER DWG REV.A DD VERF:JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
---------------------------------	------------------------	---------------	-------------	---------------------	------------------	-----------------	--------------------	----------------	-------------	--------------	---------------	----------------	--------

D5190-1		Manufactured	No			110	Each	11.0000	1	1			
D5190-1									**			Q 15-12-16	
Armrest Fitting													

Location	Loc Qty	Loc Code
----------	---------	----------

WA002	11	
131921	1	
138387	10	

D5190-3		Manufactured	No			110	Each	12.0000	1	1			
D5190-3									**			Q 15-12-16	
Weld Pin													

Location	Loc Qty	Loc Code
----------	---------	----------

WA001	11	
134241	11	
WA002	1	
129486	1	

M4130NT0.750W.049		Purchased	No			105	f	91.9000	15.5	16.31579			
M4130NT0 750W 049									**			Q 15-12-16	
4130 RD Tube .750 x.049W													

Location	Loc Qty	Loc Code
----------	---------	----------

MAT	9	
m133083	1.8	
m133307	7.2	
MAT033	82.9	
m122425	22.5	
m131541	20.4	
m133693	40	

15-5

Picklist Print

December 09, 2015 1:39:52 PM

Page 2

Work Order ID: 139833

139833

Parent Item: D5162-041

D5162-041

Parent Item Name: Seat Structure Assembly

Start Date: 12/9/2015

Required Date: 12/23/2015

Start Qty: 1.00

Required Qty: 1.00

D4667-041 Manufactured No

110 Each 3.0000 1 1

D4667-041

Armrest Stud Assembly

EL 15-12-16

Location

Loc Qty

Loc Code

WA002

3

134537

3

M4130NT0.500W.049

Purchased No

105 f 315.6150 4.33

4.557895

M4130NT0 500W 049

4130 RD Tube .500 x.049W

EL 15-12-16

Location

Loc Qty

Loc Code

MAT032

315.615

m124293

12.166

m127111

20.383

m128713

21

m129826

170.4

m130551

91.666

M4130NT1.000W.120

Purchased No

105 f 29.2500 1.2

1.263158

M4130NT1 000W 120

4130 RD Tube 1.00 x .120wall

EL 15-12-18

Location

Loc Qty

Loc Code

MAT033

29.25

m131146

29.25

D3020-1

Manufactured No

120 Each 24.0000 4 4

D3020-1

Fitting

EL 15-12-14

Location

Loc Qty

Loc Code

WA002

24

135489

7

136183

4

138313

13

December 09, 2015 1:39:53 PM

Shop Packet Print

Page 2

Picklist Print

December 09, 2015 1:39:53 PM

Page 3

Work Order ID: 139833

139833

Parent Item: D5162-041

D5162-041

Parent Item Name: Seat Structure Assembly

Start Date: 12/9/2015

Required Date: 12/23/2015

Start Qty: 1.00

Required Qty: 1.00

D3017-7 Manufactured No

130 Each 8.0000 3 3

D3017-7

Lug

**

EL 15-12-16

Location

Loc Qty

Loc Code

WA002

8

135543

8

3

D3023-1 Manufactured No

130 Each 1.0000 1 1

D3023-1

Back Panel

**

EL 15-12-15

13944941

Location

Loc Qty

Loc Code

WA001

1

138172

1

M4130NT0.750W.083 Purchased No

105 f 20.5000 2.5 2.631579

M4130NT0 750W 083

4130 RD Tube .750 x.083W

**

EL 15-12-16

Location

Loc Qty

Loc Code

MAT032

20.5

m131146

20.5

35

D3022-1 Manufactured No

150 Each 3.0000 1 1

D3022-1

Seat Pan

**

EL 15-12-15

Location

Loc Qty

Loc Code

WA001

3

125401

1

138415

2

1

Picklist Print

December 09, 2015 1:39:53 PM

Page 4

Work Order ID: 139833

139833

Parent Item: D5162-041

D5162-041

Parent Item Name: Seat Structure Assembly

Start Date: 12/9/2015

Required Date: 12/23/2015

Start Qty: 1.00

Required Qty: 1.00

D3016-15	Manufactured	No	165	Each	22.0000	2	2	
D3016-15								
Gusset								
						**		EL 15-12-16

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
WA002	22	
112203	2	
119895	20	

D3016-13	Manufactured	No	165	Each	6.0000	2	2	
D3016-13								
Bracket								
						**		EL 15-12-16

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
WA002	6	
134893	6	

D3016-17	Manufactured	No	165	Each	4.0000	2	2	
D3016-17								
Gusset								
						**		EL 15-12-16

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
WA001	4	
128213	4	

D3017-11	Manufactured	No	165	Each	17.0000	4	4	
D3017-11								
Cap								
						**		EL 15-12-16

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
WA001	17	
134300	17	

Picklist Print

December 09, 2015 1:39:53 PM

Page 5

Work Order ID: 139833

139833

Parent Item: D5162-041

D5162-041

Parent Item Name: Seat Structure Assembly

Start Date: 12/9/2015

Required Date: 12/23/2015

Start Qty: 1.00

Required Qty: 1.00

MS20600-AD4W2

Purchased

No

200

Each

455.0000

46

MS20600-AD4W2

Rivet

**

15/12/17 DAS 36 9-89

Location

Loc Qty

Loc Code

CCK005

335

m126475

335

GA

120

m126475

120

AN4-6A

Purchased

No

240

Each

332.0000

1

AN4-6A

BOLT

**

15/12/18 DAS 36 9-89

Location

Loc Qty

Loc Code

CA

143

M128403

43

M130851

100

ST325A

100

M133363

100

ST345

89

M128403

8

M133316

81

NAS43DD4-16FC

Purchased

No

240

Each

13.0000

2

NAS43DD4-16FC

Spacer

**

15/12/18 DAS 36 9-89

Location

Loc Qty

Loc Code

ST262

13

m130835

13

2

*MS20600AD4W23

M129795

6x

15/12/17

DAS 36 9-89

Picklist Print

December 09, 2015 1:39:53 PM

Page 6

Work Order ID: 139833

139833

Parent Item: D5162-041

D5162-041

Parent Item Name: Seat Structure Assembly

Start Date: 12/9/2015

Required Date: 12/23/2015

Start Qty: 1.00

Required Qty: 1.00

AN4-4A Purchased No

240 Each 188.0000 1 1

AN4-4A

BOLT

**

15/12/18 DAS 36 9-89

Location Loc Qty Loc Code

FP001 6

m125709 6

ST325A 182

m129390 182

D5159-043 Manufactured No

240 Each 1.0000 1 1

D5159-043

Seat Back Brace Assembly

**

Q 15-18-18

Location Loc Qty Loc Code

ST506 1

138337 1

MS27039-4-20 Purchased No

240 Each 68.0000 4 4

MS27039-4-20

Screw

**

15/12/18 DAS 36 9-89

Location Loc Qty Loc Code

ST283 68

m132551 68

MS20600-AD4W4 Purchased No

240 Each 260.0000 4 4

MS20600-AD4W4

Rivets

**

15/12/18 DAS 36 9-89

Location Loc Qty Loc Code

ST308 246

M132640 246

WA003 14

M132256 14

December 09, 2015 1:39:53 PM

Shop Packet Print

Page 6

Picklist Print

December 09, 2015 1:39:53 PM

Page 7

Work Order ID: 139833

139833

Parent Item: D5162-041

D5162-041

Parent Item Name: Seat Structure Assembly

Start Date: 12/9/2015

Required Date: 12/23/2015

Start Qty: 1.00

Required Qty: 1.00

MS27039-1-19

Purchased

No

240

Each

134.0000

4

4

MS27039-1-19

Screw

15/12/18
DAS
36
9-89

Location

Loc Qty

Loc Code

GA

4

m124326

4

ST280

130

m133134

130

4

D3024-1

Manufactured

No

240

Each

26.0000

3

3

D3024-1

Spacer

15/12/18
DAS
36
9-89

Location

Loc Qty

Loc Code

ST015

26

134323

2

136424

24

3

MS27039-1-17

Purchased

No

240

Each

218.0000

1

1

MS27039-1-17

Screw (601.1954)

15/12/18
DAS
36
9-89

Location

Loc Qty

Loc Code

GA

186

120142

37

m127831

149

ST285

32

m127305

29

m130388

3

1

MS24693-S49

Purchased

No

240

Each

200.0000

4

4

MS24693-S49

Screw

15/12/18
DAS
36
9-89

Location

Loc Qty

Loc Code

ST286

200

m130835

200

M130799 (4x)

December 09, 2015 1:39:53 PM

Shop Packet Print

Page 7

Picklist Print

December 09, 2015 1:39:53 PM

Page 8

Work Order ID: 139833

139833

Parent Item: D5162-041

D5162-041

Parent Item Name: Seat Structure Assembly

Start Date: 12/9/2015

Required Date: 12/23/2015

Start Qty: 1.00

Required Qty: 1.00

NAS1149D0332J

Purchased

No

240

Each

1,799.000

30

30

NAS1149D0332.J

Washer

15/12/18 DAS 36 9-89

Location

Loc Qty

Loc Code

CA

14

m129682

14

FP001

72

m129682

72

GA

327

m132677

327

ST264

1386

m133498

1386

30

MS20600-AD4W5

Purchased

No

240

Each

500.0000

8

8

MS20600-AD4W5

Blind Rivet

15/12/18 DAS 36 9-89

Location

Loc Qty

Loc Code

ST308

363

m131340

11

m132769

352

WA004

137

m131618

134

m132640

3

8

Picklist Print

December 09, 2015 1:39:54 PM

Page 9

Work Order ID: 139833

139833

Parent Item: D5162-041

D5162-041

Parent Item Name: Seat Structure Assembly

Start Date: 12/9/2015

Required Date: 12/23/2015

Start Qty: 1.00

Required Qty: 1.00

MS21042L3

Purchased

No

240

Each

1,901.000

17

17

MS21042L3

Nut

**

15/12/18

DAS
36
9-89

Location

Loc Qty

Loc Code

FP001

188

m133790

188

GA

283

m133790

283

ST304

1430

m133790

1430

17

NAS1149D0432J

Purchased

No

240

Each

521.0000

17

17

NAS1149D0432J

WASHER

**

15/12/18

DAS
36
9-89

Location

Loc Qty

Loc Code

GA

230

m131026

230

ST269

291

m131026

291

17

D5159-041

Manufactured

No

240

Each

0.0000

1

1

D5159-041

Seat Back Brace Assembly

13843721

**

EL 15/12/16

AN4-14A

Purchased

No

240

Each

508.0000

2

2

AN4-14A

Bolt

**

15/12/18

DAS
36
9-89

Location

Loc Qty

Loc Code

FG

5

122141

5

ST325A

400

M133769

400

ST344

103

M133316

103

2

December 09, 2015 1:39:54 PM

Shop Packet Print

Page 9

Picklist Print

December 09, 2015 1:39:54 PM

Page 10

Work Order ID: 139833

139833

Parent Item: D5162-041

D5162-041

Parent Item Name: Seat Structure Assembly

Start Date: 12/9/2015

Required Date: 12/23/2015

Start Qty: 1.00

Required Qty: 1.00

D3031-1 Manufactured No

240 Each 14.0000 2 2

D3031-1

Loop

15/12/18
DAS
36
9-89

Location

Loc Qty

Loc Code

GA

14

134318

14

AN3-12A

Purchased No

240 Each 109.0000 3 3

AN3-12A

Bolt

15/12/18
DAS
36
9-89

Location

Loc Qty

Loc Code

GA

5

m129682

5

ST349

104

m133064

16

m133234

88

3

Picklist Print

December 09, 2015 1:39:54 PM

Page 11

Work Order ID: 139833

139833

Parent Item: D5162-041

D5162-041

Parent Item Name: Seat Structure Assembly

Start Date: 12/9/2015

Required Date: 12/23/2015

Start Qty: 1.00

Required Qty: 1.00

MS21042L4

Purchased

No

240

Each

3,645.000

8

8

MS21042L 4

Locknut

DAS
36
9-89

15/12/18
m133760
A123456
80
✱

Location

Loc Qty

Loc Code

FP001

2

m124231

2

GA

49

m127813

49

ST260a

138

m130799

56

m131803

6

m132262

76

ST303

3287

m133363

287

m133769

3000

ST305

169

m128300

8

m130388

7

m130922

97

m132123

56

m133316

1

D2199-31

Manufactured

No

240

Each

3.0000

1

1

D2199-31

Strut Details

15/12/18

Location

Loc Qty

Loc Code

ST351

3

135410

1

136138

1

138227

1

Picklist Print

December 09, 2015 1:39:54 PM

Page 12

Work Order ID: 139833

139833

Parent Item: D5162-041

D5162-041

Parent Item Name: Seat Structure Assembly

Start Date: 12/9/2015

Required Date: 12/23/2015

Start Qty: 1.00

Required Qty: 1.00

MS27039-1-20

Purchased

No

240

Each

190.0000

2

2

MS27039-1-20

Screw

15/12/18 DAS 36 9-89

Location

Loc Qty

Loc Code

ST284

190

124326

190

MS27039-4-21

Purchased

No

240

Each

54.0000

2

2

MS27039-4-21

Screw

15/12/18 DAS 36 9-89

Location

Loc Qty

Loc Code

ST283

49

m132803

49

ST284

5

m129909

5

MS27039-1-18

Purchased

No

240

Each

1,849.000

3

3

MS27039-1-18

Screw

15/12/18 DAS 36 9-89

Location

Loc Qty

Loc Code

cck007a

1373

124326

1373

GA

259

123522

59

124326

200

ST284

217

124326

217

Picklist Print

December 09, 2015 1:39:54 PM

Page 13

Work Order ID: 139833

139833

Parent Item: D5162-041

D5162-041

Parent Item Name: Seat Structure Assembly

Start Date: 12/9/2015

Required Date: 12/23/2015

Start Qty: 1.00

Required Qty: 1.00

D5159-045

Manufactured No

240 Each

2.0000

1

1

D5159-045

Seat Rib Assembly

EL 15-12-15

Location

Loc Qty

Loc Code

ST506

2

138429

1

139073

1

AN970-4

Purchased No

240 Each

179.0000

1

1

AN970-4

Washer

15/12/18
DAS
36
9-89

Location

Loc Qty

Loc Code

ST329

179

129521

9

m129521

20

m133235

100

m133769

50



DESIGN CP	DRAWN BY CP	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED #	APPROVED #	DRAWING NO. D3016	REV. A SHEET 1 OF 3
DATE 01.05.18		TITLE SEAT FRAME ASSEMBLY	SCALE NTS
A	01.05.18	NEW ISSUE	

QTY	PART NUMBER	DESCRIPTION	MATERIAL
X	D3016-041	SEAT FRAME ASSEMBLY	N/A
1	D3016-1	TUBE	AISI 4130N TUBE, Ø0.75 DIA x 0.049 WALL (M4130N-T0750W049)
2	D3016-3	TUBE	AISI 4130N TUBE, Ø0.75 DIA x 0.049 WALL (M4130N-T0750W049)
1	D3016-5	TUBE	AISI 4130N TUBE, Ø0.50 DIA x 0.049 WALL (M4130N-T0500W049)
2	D3016-7	TUBE	AISI 4130N TUBE, Ø0.50 DIA x 0.049 WALL (M4130N-T0500W049)
1	D3016-9	SADDLE	AISI 4130N TUBE, Ø1.00 DIA x 0.120 WALL (M4130N-T1000W120)
1	D3016-11	SADDLE	AISI 4130N TUBE, Ø1.00 DIA x 0.120 WALL (M4130N-T1000W120)
1	D3016-13	BRACKET	AISI 4130N SHEET, 18 GAUGE (M4130N-S049)
1	D3016-15	GUSSET	AISI 4130N SHEET, 18 GAUGE (M4130N-S049)
1	D3016-17	GUSSET	AISI 4130N SHEET, 18 GAUGE (M4130N-S049)
2	D3020-1	FITTING	N/A

NOTES

- 1) WELD PER DART QSI 004
- 2) ON SHEET METAL PARTS, BREAK ALL UNMARKED CORNERS 0.020-0.040
- 3) FINISH: POWDER COAT GREY SANDTEX (REF. 4.3.5.6) PER DART QSI 005 4.3
- 4) ALL DIMENSIONS ARE IN INCHES
- 5) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED

DEO ATTACHED

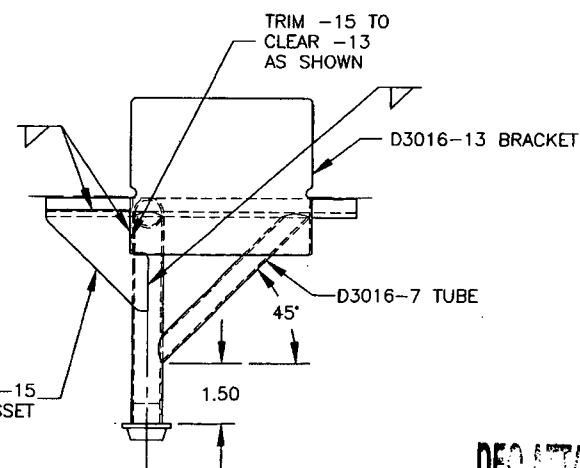
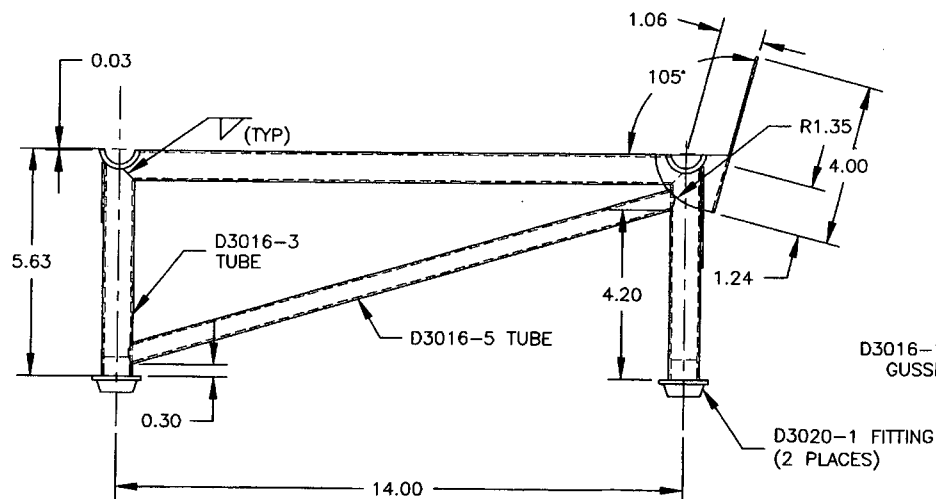
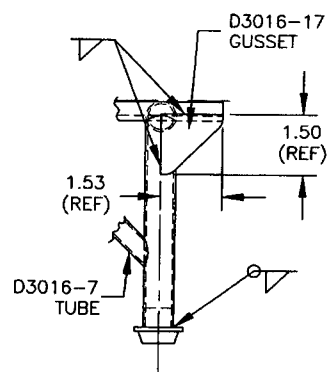
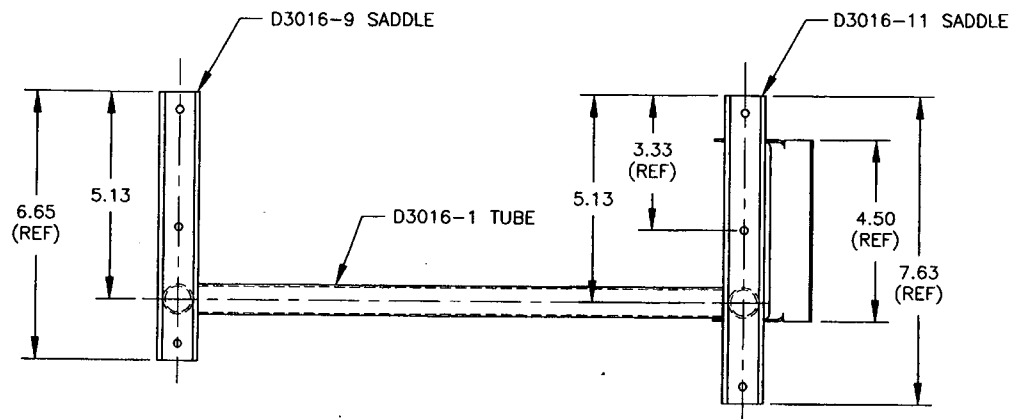
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01.05.30

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20151209
SA 139833

D3016-041 SEAT FRAME ASSEMBLY



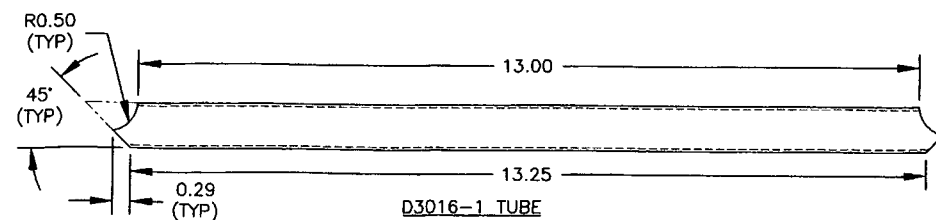
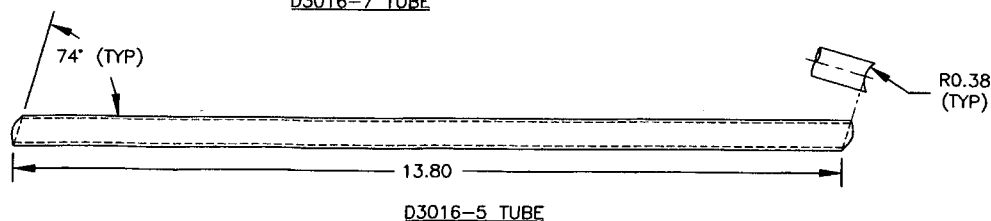
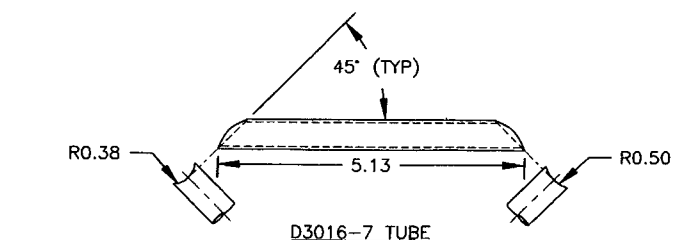
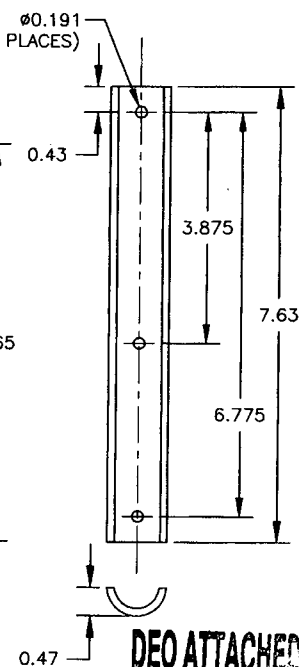
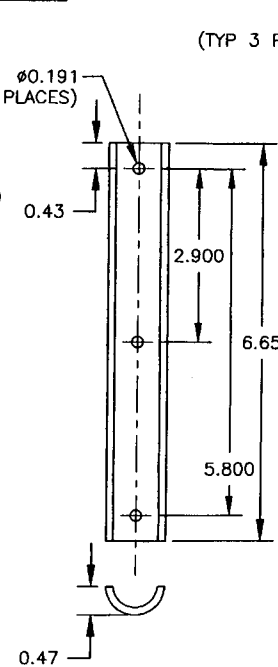
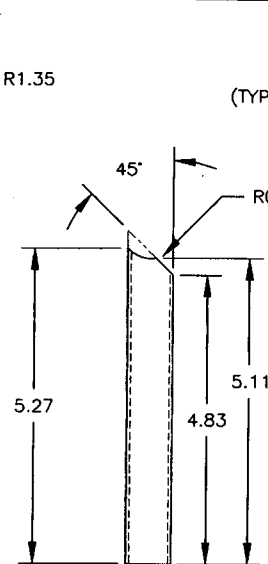
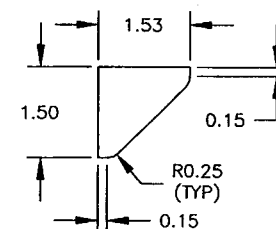
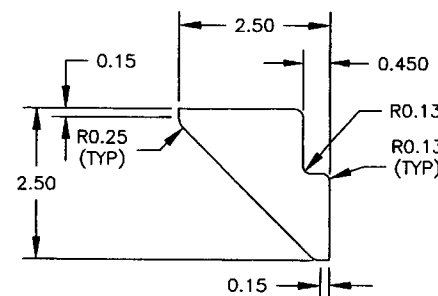
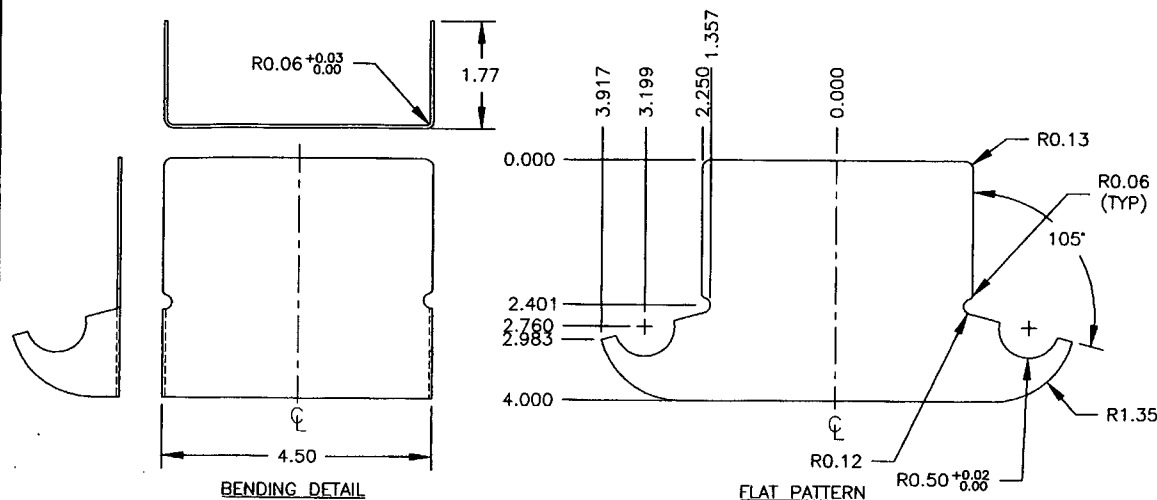
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DESIGN UP	DRAWN BY UP	DART	DART AEROSPACE LTD. HAWKESBURY, ONTARIO, CANADA
CHECKED #	APPROVED #	DRAWING NO. D3016	REV. A
DATE 01.05.18	TITLE SEAT FRAME ASSEMBLY	SHEET 2 OF 3	SCALE 1:3



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DESIGN CP	DRAWN BY CP	DART	DART AEROSPACE LTD. HARRISBURY, ONTARIO, CANADA
CHECKED #	APPROVED #	DRAWING NO. D3016	REV. A
DATE 01.05.18	TITLE SEAT FRAME ASSEMBLY	SHEET 3 OF 3	SCALE 1:2

DEO ATTACHED
RELEASED
9.05.30

DRAWING NO. D3016	TITLE SEAT FRAME ASSEMBLY	REV. A	DART AEROSPACE LTD ENGINEERING ORDER	D.E.O. NO. D3016-A-1	SHEET NO. SHEET 1 OF 1	SCALE NTS
DRAWN <i>J</i>	CHECKED <i>UP</i>	MFG. APPR. <i>R</i>	APPROVED <i>W</i>	DE APPR. <i>H</i>		
DATE 10.01.29	DATE 10.01.29	DATE 10.01.29	DATE 10.01.29	DATE 10.01.29		

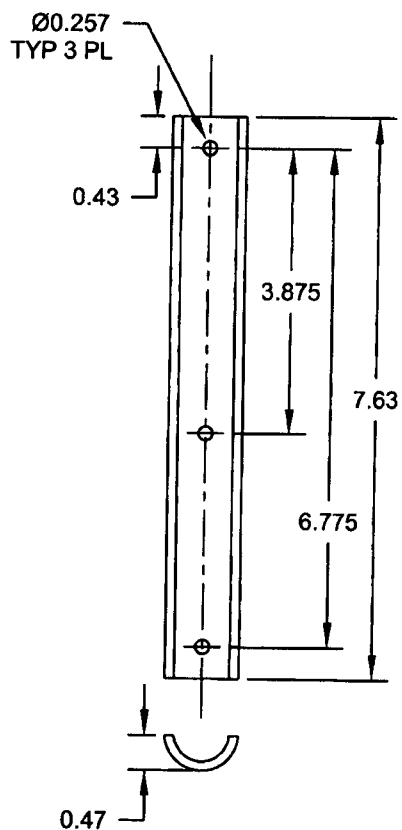
PURPOSE:

TO REVISE D3016-11 SADDLE'S HOLE SIZES

CHANGE:

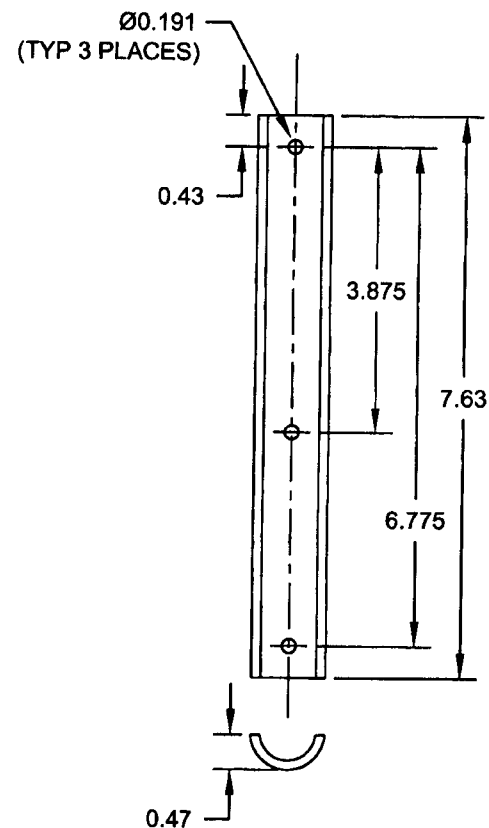
DETAIL D3016-11 SADDLE (SHEET 3): Ø0.257 TYP 3 PL WAS Ø0.191 (TYP 3 PLACES) AS SHOWN:

IS:

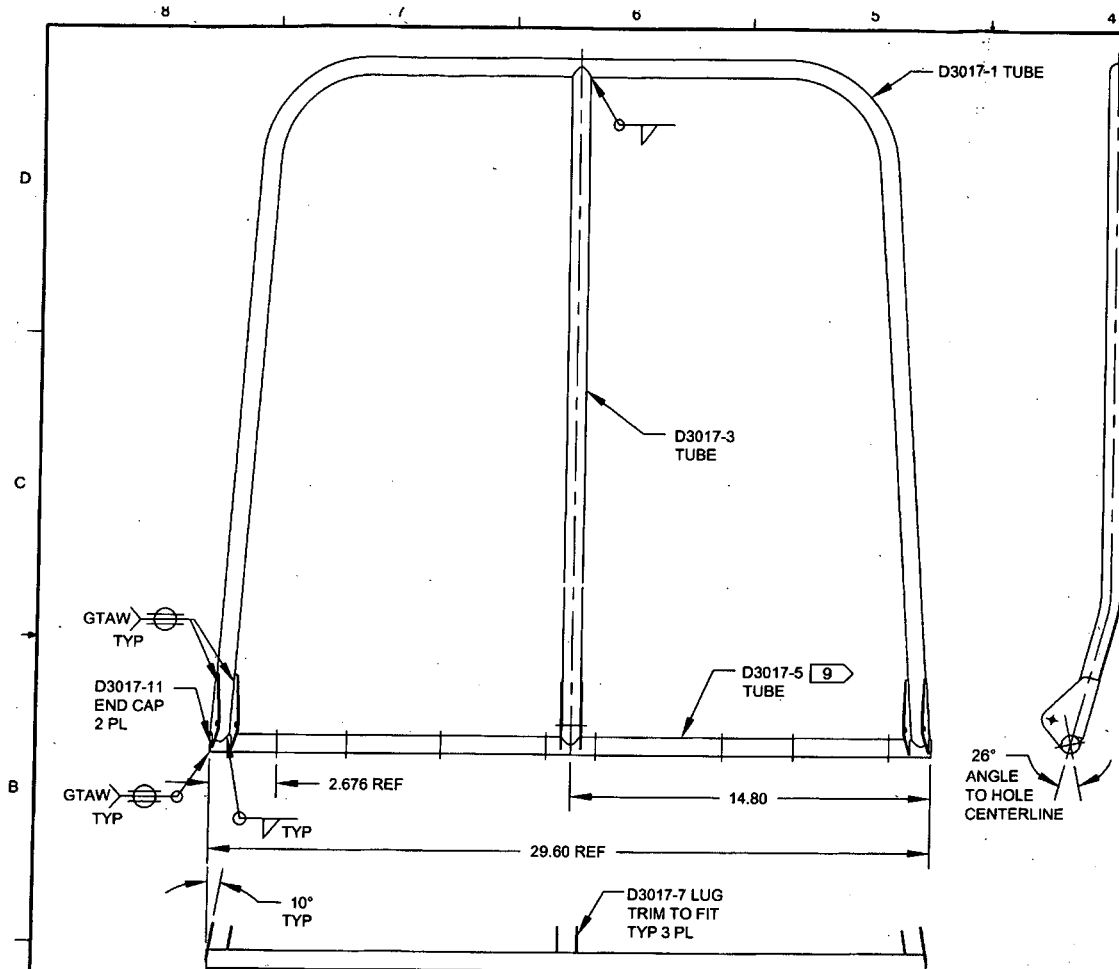


D3016-11 SADDLE

WAS:



D3016-11 SADDLE



ITEM No.	QTY	PART NUMBER	DESCRIPTION
	X	D3017-041	BACK FRAME ASSEMBLY
1	1	D3017-1	TUBE
2	1	D3017-3	TUBE
3	1	D3017-5	TUBE
4	3	D3017-7	LUG
5	2	D3017-11	END CAP

DRILL Ø0.128 HOLES TO LINE UP WITH D3023-1 BACK PANEL

26° ANGLE TO HOLE CENTERLINE

D3017-041 BACK FRAME ASSEMBLY

NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: IDENTIFY WITH DART P/N "D3017-041" USING FINE POINT PERMANENT INK-MARKER
- 7) WEIGHT: 4.50 lbs
- 8) WELD PER DART QSI 004
- 9) ROTATE SO THAT PILOT HOLES ARE ANGLED AS SHOWN IN END VIEW.

RELEASED

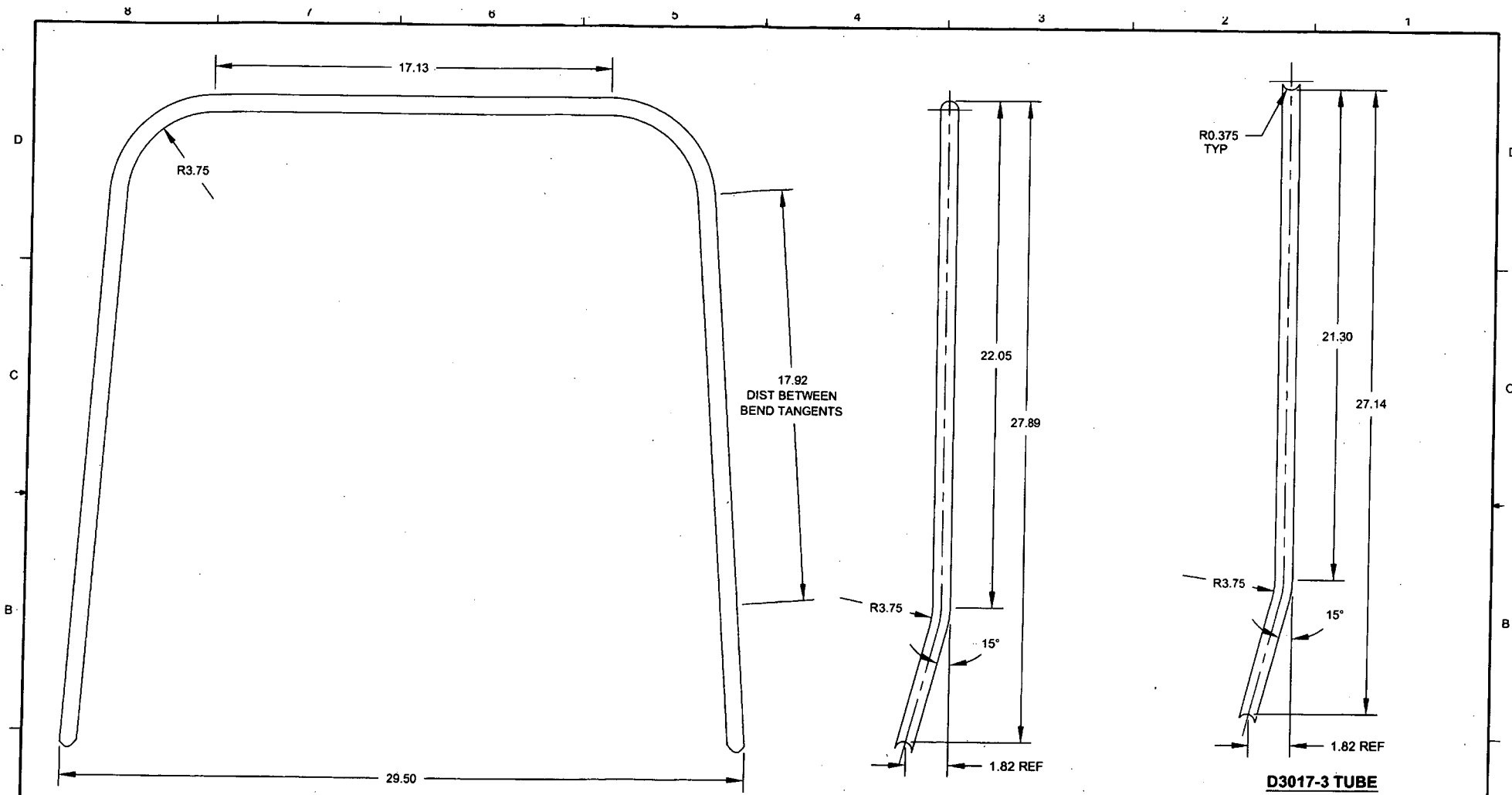
2015 FEB 04

ECN 15-522 QP

20151209

51139833

C	FINISH REMOVED (TO BE APPLIED AT NEXT ASSY)	AJS	14.11.13
B	REFORMAT DWG, -5 TUBE WALL THKNS REV'D (A8-3) SHEET 3 & 4 ADDED TO CLARIFY DRAWING. RADIUS CHANGED FROM R4.00 TO R3.75 (B4-2, B2-2). HOLE SIZE CHANGED FROM Ø0.191 TO Ø0.257 (C6-3, C3-3)	JPH	10.01.13
A	NEW ISSUE	CP	01.05.18
REV.	DESCRIPTION	BY	DATE
DESIGN	CP		
DRAWN	AJS		
CHECKED			
MFG. APPR.			
APPROVED			
DE APPR.			
DATE	14.11.13		
DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA DRAWING NO. D3017 TITLE BACK FRAME ASSEMBLY SCALE NTS COPYRIGHT © 2001 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.			



D3017-1 TUBE

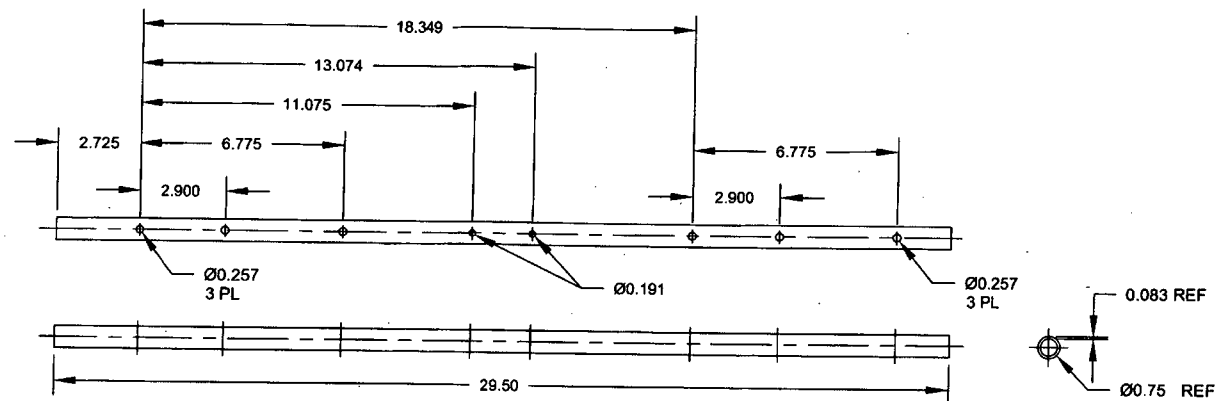
D3017-3 TUBE

NOTES:

- 1) MATERIAL: AISI 4130N TUBE, Ø0.75 DIA x 0.049 WALL (M4130N-T0750W049)
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: D3017-1: 2.38 lbs; D3017-3: 0.84 lbs.

RELEASED
2015 FEB 04

DESIGN	CP	DART AEROSPACE LTD	
DRAWN	AJS	HAWKESBURY, ONTARIO, CANADA	
CHECKED		DRAWING NO.	REV. C
MFG. APPR.		D3017	SHEET 2 OF 4
APPROVED		TITLE	SCALE
DE APPR.		BACK FRAME ASSEMBLY	NTS
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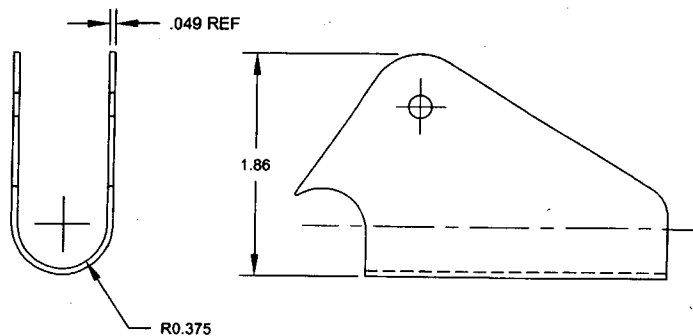


D3017-5 TUBE

NOTES:

- 1) MATERIAL: AISI 4130N TUBE, Ø0.75 DIA x 0.083 WALL (M4130N-T0750W083)
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 0.89 lbs

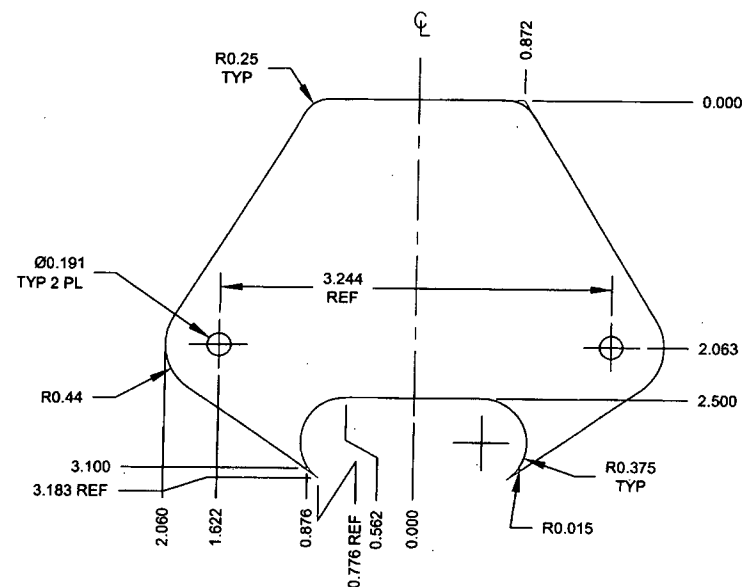
DESIGN	CP	DART AEROSPACE LTD	
DRAWN	AJS	HAWKESBURY, ONTARIO, CANADA	
CHECKED		DRAWING NO.	REV. C
MFG. APPR.		D3017	SHEET 3 OF 4
APPROVED		TITLE	SCALE
DE APPR.		BACK FRAME ASSEMBLY	NTS
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D3017-7 LUG
BENDING DETAIL
MAKE FROM D3017-7F



D3017-11 END CAP



D3017-7F FLAT PATTERN
PART IS SYMMETRIC
ABOUT CENTERLINE

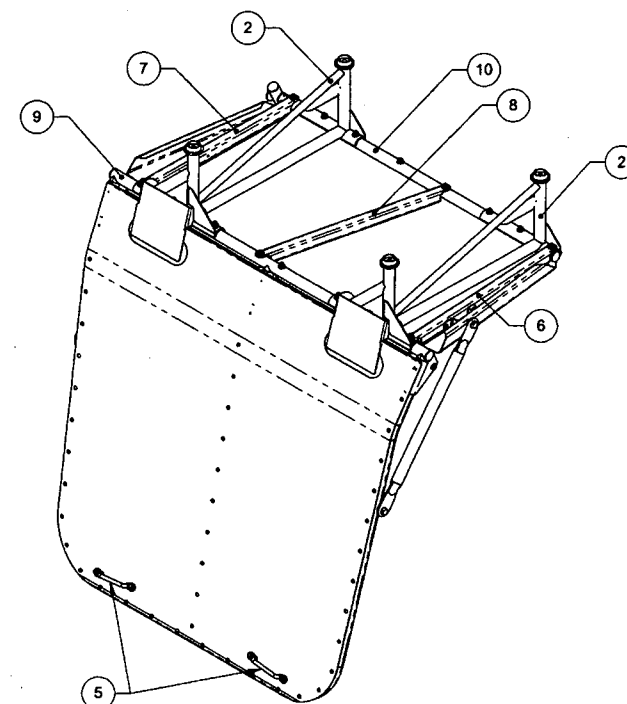
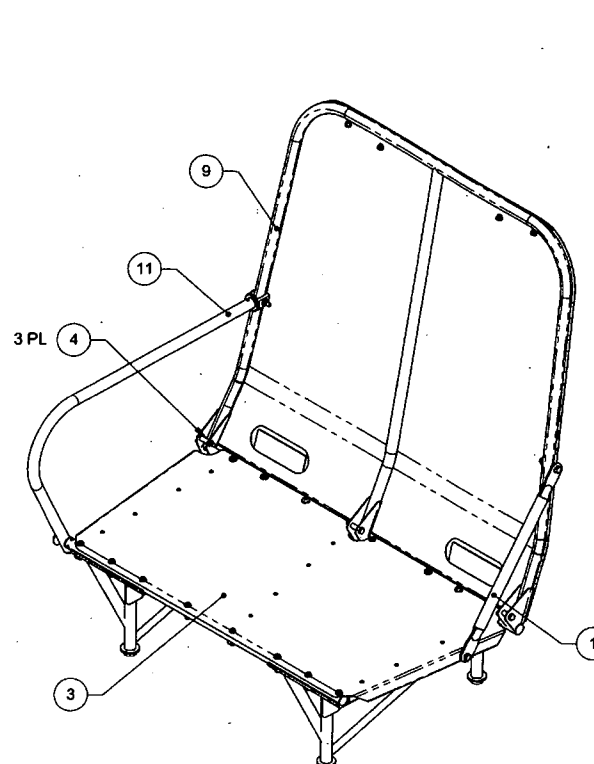
NOTES:

- 1) MATERIAL: AISI 4130N SHEET, 18 GAUGE (M4130N-S049)
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: -7: 0.12 lbs; -11: 0.01 lbs.

RELEASED
2015 FEB 04

DESIGN	CP	DART AEROSPACE LTD	
DRAWN	ALS	HAWKESBURY, ONTARIO, CANADA	
CHECKED	ALS	DRAWING NO.	REV. C
MFG. APPR.	ALS	D3017	SHEET 4 OF 4
APPROVED	ALS	TITLE	SCALE
DE APPR.	ALS	BACK FRAME ASSEMBLY	NTS
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ITEM	QTY	P/N	DESCRIPTION
	X	D5162-041	SEAT STRUCTURE ASSEMBLY
1	1	D2199-31	STRUT
2	2	D3016-041	SEAT FRAME ASSEMBLY
3	1	D3022-1	SEAT PAN
4	3	D3024-1	SPACER
5	2	D3031-1	LOOP
6	1	D5159-041	SEAT BACK BRACE ASSY
7	1	D5159-043	SEAT BACK BRACE ASSY
8	1	D5159-045	SEAT RIB ASSY
9	1	D5162-051	SEATBACK ASSEMBLY
10	1	D5189-041	TUBE ASSEMBLY
11	1	D5189-043	ARMREST ASSEMBLY
12	3	AN3-12A	BOLT
13	1	AN4-6A	BOLT
14	1	AN4-4A	BOLT
15	2	AN4-14A	BOLT
16	1	AN970-4	WASHER
17	4	MS20600AD4W4	RIVET, BLIND
18	8	MS20600AD4W5	RIVET, BLIND
19	17	MS21042L3	NUT, SELF-LOCKING
20	8	MS21042L4	NUT, SELF-LOCKING
21	4	MS24693-S49	SCREW, CSK 100"
22	1	MS27039-1-17	SCREW, PAN-HEAD
23	3	MS27039-1-18	SCREW, PAN-HEAD
24	4	MS27039-1-19	SCREW, PAN-HEAD
25	2	MS27039-1-20	SCREW, PAN-HEAD
26	2	MS27039-4-21	SCREW, PAN-HEAD
27	4	MS27039-4-20	SCREW, PAN-HEAD
28	17	NAS1149D0432J	WASHER
29	30	NAS1149D0332J	WASHER
30	2	NAS43DD4-16FC	SPACER



D5162-041 SEAT STRUCTURE ASSEMBLY

GENERAL NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: N/A
- 7) WEIGHT: 19.1 lbs

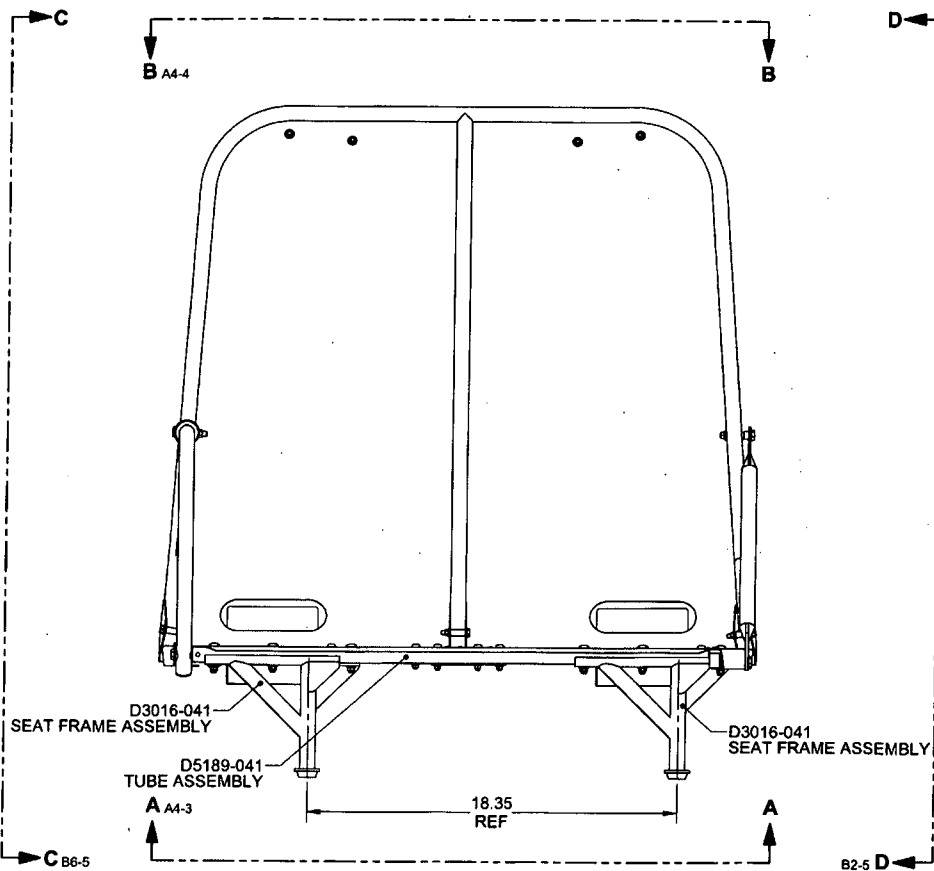
RELEASED

2015 FEB 04

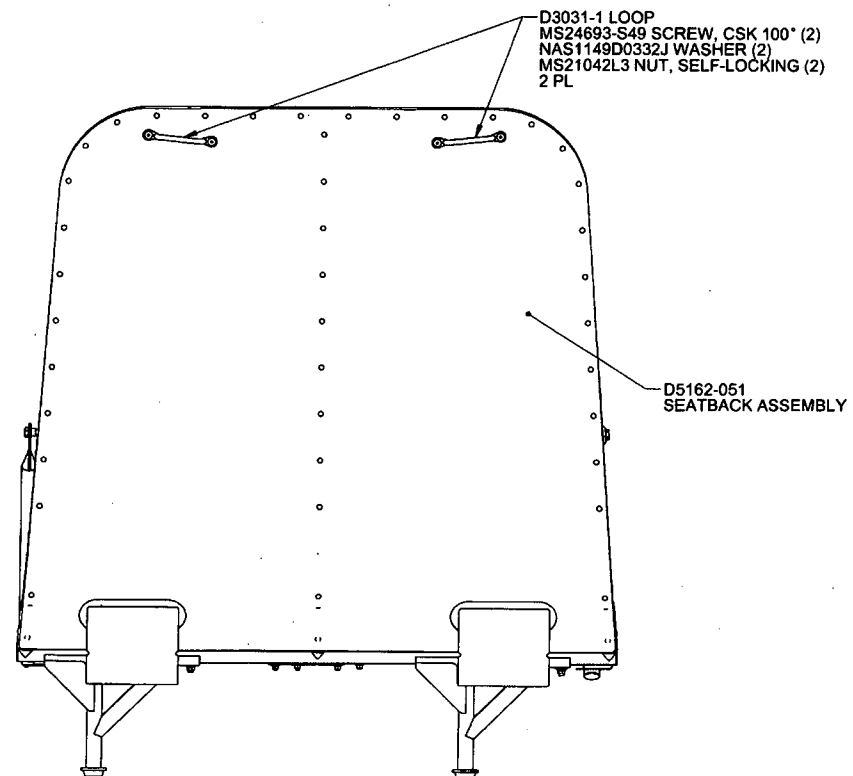
REN 05-222 9

APPROVED

A		NEW ISSUE		AJS	14.10.03
REV.	DESCRIPTION			BY	DATE
DESIGN	AJS	DART AEROSPACE LTD		HAWKESBURY, ONTARIO, CANADA	
DRAWN	AJS	DRAWING NO.		REV. A	
CHECKED	AP	D5162		SHEET 1 OF 6	
MFG. APPR.	DD	TITLE		SCALE	
APPROVED	HS	SEAT STRUCTURE ASSY		NTS	
DE APPR.	DS	COPYRIGHT © 2014 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR DISSEMINATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.			
DATE	14.10.03				



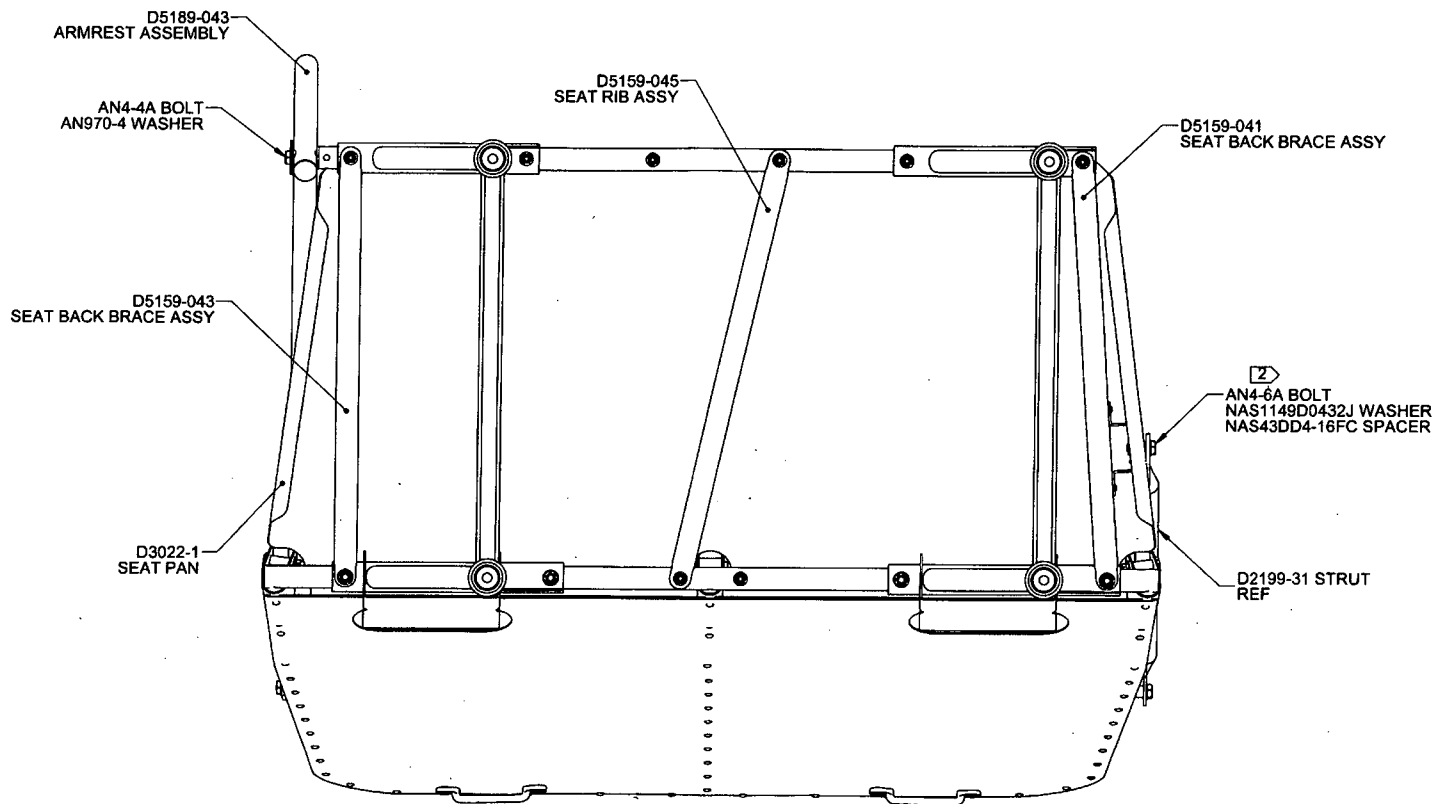
D5162-041 SEAT STRUCTURE ASSEMBLY



RELEASED
2015 FEB 04

APPROVED

DESIGN	AJS	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	AJS		
CHECKED	AP	DRAWING NO. D5162	REV. A
MFG. APPR.	DD		SHEET 2 OF 6
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	SEAT STRUCTURE ASSY	NTS
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VIEW A-A B8-2
(SCALE 1.5X)

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2015 FEB 04

APPROVED

DESIGN	AJS	DART AEROSPACE LTD	
DRAWN	AJS	HAWKESBURY, ONTARIO, CANADA	
CHECKED	AP	DRAWING NO.	REV. A
MFG. APPR.	DD	D5162	SHEET 3 OF 6
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	SEAT STRUCTURE ASSY	NTS
DATE	14.10.03	COPYRIGHT © 2014 BY DART AEROSPACE LTD	
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SHEET 3 NOTES:

- 1) INSTALL D2199-31 STRUT AT SEAT PAN END FIRST
- 2) TRANSFER MARK FROM D5159-041 SEAT BACK BRACE ASSY TO D3022-1 SEAT PAN AND DRILL $\varnothing 0.386$ THRU D3022-1 SEAT PAN.

8

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1

D

C

B

A

MS27039-1-18 SCREW, PAN-HEAD
NAS1149D0332J WASHER (2)
MS21042L3 NUT, SELF-LOCKING

MS27039-4-20 SCREW, PAN-HEAD
NAS1149D0432J WASHER (2)
MS21042L4 NUT, SELF-LOCKING

MS27039-4-21 SCREW, PAN-HEAD
(2) NAS1149D0432J WASHER
MS21042L4 NUT, SELF-LOCKING

MS27039-4-21 SCREW, PAN-HEAD
NAS1149D0432J WASHER (2)
MS21042L4 NUT, SELF-LOCKING

D3022-1 SEAT PAN
REF

MS27039-4-20 SCREW, PAN-HEAD
(2) NAS1149D0432J WASHER
MS21042L4 NUT, SELF-LOCKING

D5159-043
SEAT BACK BRACE ASSY
REF

MS27039-1-18 SCREW, PAN-HEAD
NAS1149D0332J WASHER (2)
MS21042L3 NUT, SELF-LOCKING

D5159-041
SEAT BACK BRACE ASSY
REF

1
MS20600AD4W5
RIVET, BLIND, 4 PL
(INTO D5159-043)

1
MS20600AD4W5
RIVET, BLIND, 4 PL
(INTO D5159-041)

MS27039-1-20 SCREW, PAN-HEAD
(2) NAS1149D0332J WASHER
MS21042L3 NUT, SELF-LOCKING

MS27039-1-20 SCREW, PAN-HEAD
NAS1149D0332J WASHER (2)
MS21042L3 NUT, SELF-LOCKING

MS27039-1-19 SCREW, PAN-HEAD
(2) NAS1149D0332J WASHER
MS21042L3 NUT, SELF-LOCKING

D5159-045
SEAT RIB ASSY

MS27039-1-19 SCREW, PAN-HEAD
NAS1149D0332J WASHER (2)
MS21042L3 NUT, SELF-LOCKING

MS27039-1-17 SCREW, PAN-HEAD
(2) NAS1149D0332J WASHER
MS21042L3 NUT, SELF-LOCKING

1
MS20600AD4W4
RIVET, BLIND, 4 PL
(INTO D5159-045)

VIEW B-B D8-2
(SCALE 1.5X)

RELEASED

2015 FEB 04

SHEET 4 NOTES:

- 1) TRANSFER MARK FROM D5159-041/-043/-045 TO D3022-1 SEAT PAN
DRILL Ø0.129 THRU SEAT PAN THEN INSTALL MS20600AD4W4/5 RIVETS.

APPROVED

DESIGN	AJS	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	AJS		
CHECKED	AP	DRAWING NO.	REV. A
MFG. APPR.	DD	D5162	SHEET 4 OF 6
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	SEAT STRUCTURE ASSY	NTS
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8

7

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1

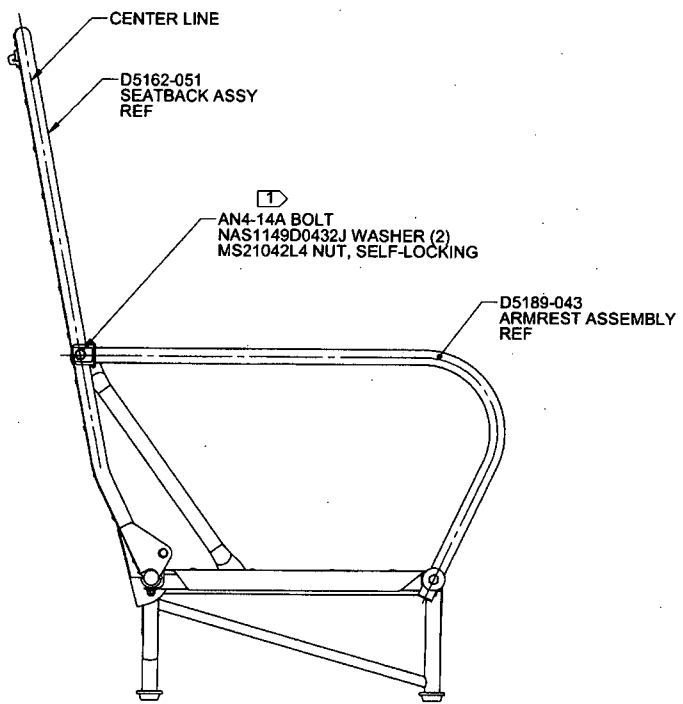
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D

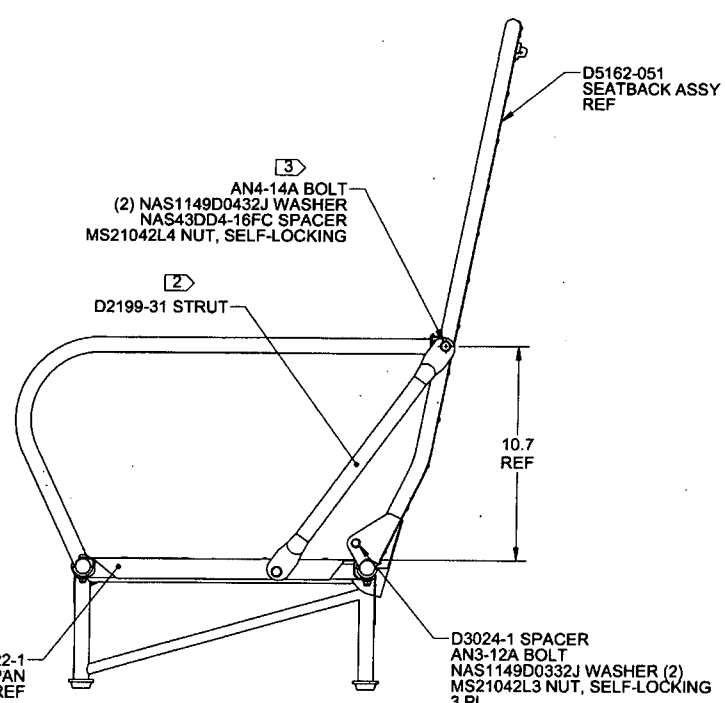
C

B

A



VIEW C-C A8-2



VIEW D-D A5-2

SHEET 2 NOTES:

- 1) ALIGN THE PILOT HOLE ON THE D5189-043 ARMREST ASSEMBLY TO THE CENTERLINE ON THE D5162-051 BACK FRAME ASSEMBLY AND DRILL $\varnothing 0.257$ THRU THE D5189-043 AND D5162-051.
- 2) INSTALL D2199-31 STRUT AT SEAT PAN END FIRST
- 3) TRANSFER MARK FROM D2199-31 STRUT TO D5162-051 SEATBACK ASSY AND DRILL $\varnothing 0.266$ THRU D5162-051 SEATBACK ASSY

RELEASED
2015 FEB 04

APPROVED

DESIGN	AJS	DART AEROSPACE LTD	
DRAWN	AJS	HAWKESBURY, ONTARIO, CANADA	
CHECKED	AP	DRAWING NO.	REV. A
MFG. APPR.	DD	D5162	SHEET 5 OF 6
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	SEAT STRUCTURE ASSY	NTS
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A

B

C

D

8 7 6 5 4 3 2 1

ITEM	QTY -051	P/N	DESCRIPTION
	X	D5162-051	SEATBACK ASSEMBLY
1	1	D3017-041	BACK FRAME ASSEMBLY
2	1	D3023-1	BACK PANEL
3	46	MS20600AD4W2	RIVET, BLIND

D3017-041
BACK FRAME ASSEMBLY

MS20600AD4W2
RIVET, BLIND
46 PL

D3023-1
BACK PANEL

8 D5162-051 SEATBACK ASSEMBLY

NOTES:

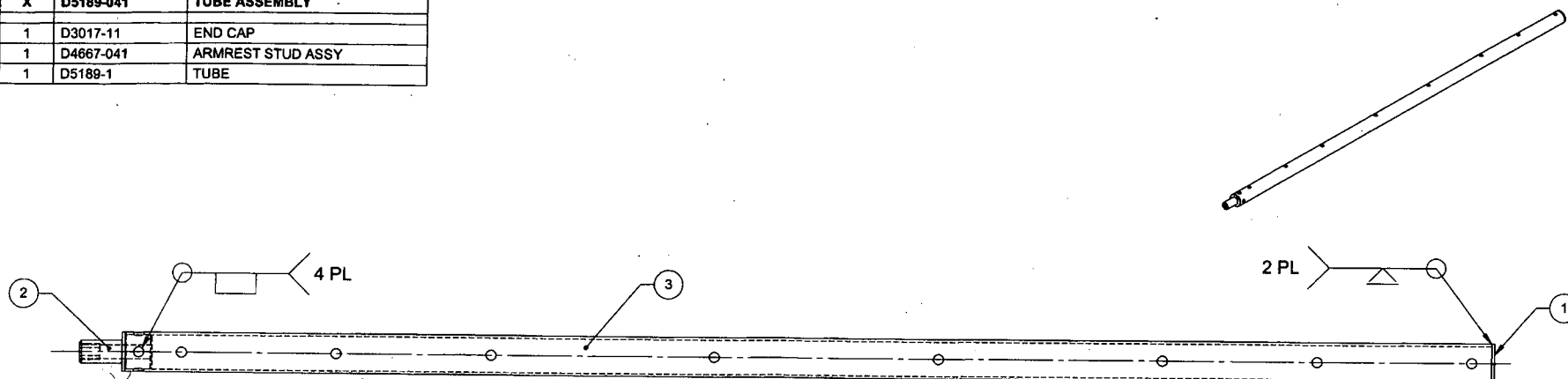
- 1) MATERIAL: N/A
- 2) FINISH: POWDER COAT GREY SANDTEX (4.3.5.6) PER DART QSI 005 4.3
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 7.42 lbs
- 8) TRANSFER MARK FROM D3023-1 TO D3017-041.
DRILL $\varnothing 0.129$ INTO THE D3017-041 (DRILL THRU ONE WALL ONLY).
THEN INSTALL MS20600AD4W2 RIVETS.

RELEASED
2015 FEB 04

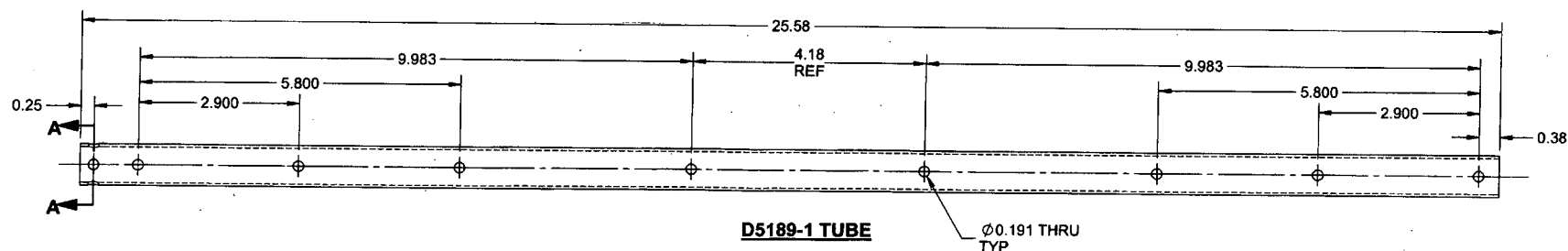
APPROVED

DESIGN	AJS	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	AJS		
CHECKED	AP	DRAWING NO. D5162	REV. A
MFG. APPR.	DD		SHEET 6 OF 6
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	SEAT STRUCTURE ASSY	NTS
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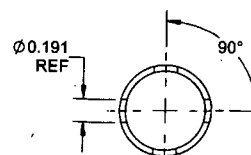
ITEM	QTY -041	P/N	DESCRIPTION
	X	D5189-041	TUBE ASSEMBLY
1	1	D3017-11	END CAP
2	1	D4667-041	ARMREST STUD ASSY
3	1	D5189-1	TUBE



D5189-041 TUBE ASSEMBLY



D5189-1 TUBE



SECTION A-A
SCALE 2X

NOTES:

- 1) MATERIAL -041: N/A
- 1: AISI 4130N SEAMLESS STEEL TUBING, $\phi 0.750 \times 0.049$ WALL
PER MIL-T-6736 OR AMS 6371/6360/6361/6362/6373/6374
REF M4130NT0.750W0.049
- 2) FINISH -041: POWDER COAT GREY SANDTEX (4.3.5.6) PER DART QSI 005 4.3
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 0.85 lbs
- 8) WELD PER DART QSI 004

RELEASED

2015 FEB 04

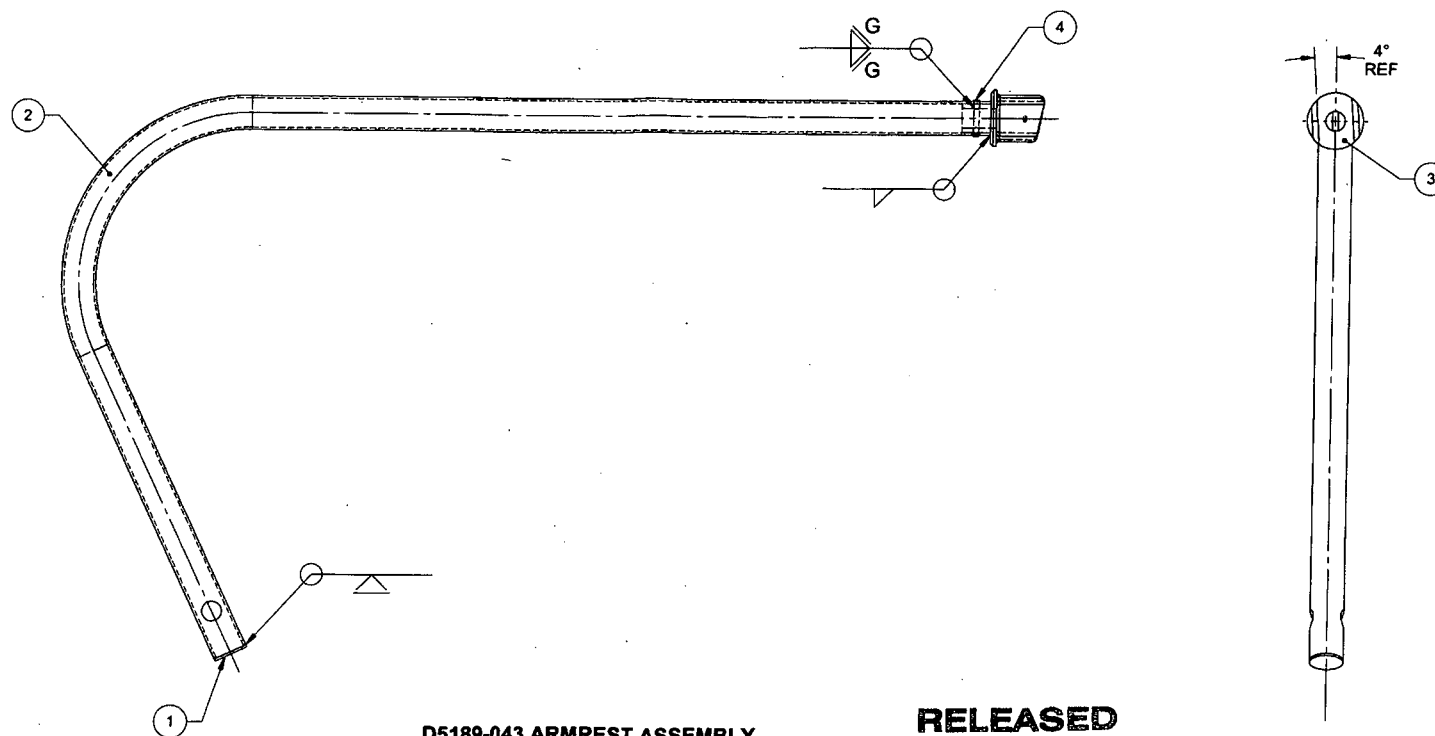
ECN 15-522 4

SH 139833 20151209

A	NEW ISSUE	AJS	14.11.18
REV	DESCRIPTION	BY	DATE
DESIGN	AJS	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	AJS		
CHECKED	AP	DRAWING NO.	REV. A
MFG. APPR.	DD	D5189	SHEET 1 OF 3
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	ARMREST COMPONENTS	NTS
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APPROVED

ITEM	QTY	P/N	DESCRIPTION
	X	D5189-043	ARMREST ASSEMBLY
1	1	D3017-11	END CAP
2	1	D5189-3	ARMREST
3	1	D5190-1	ARMREST FITTING
4	1	D5190-3	WELD PIN



D5189-043 ARMREST ASSEMBLY

RELEASED

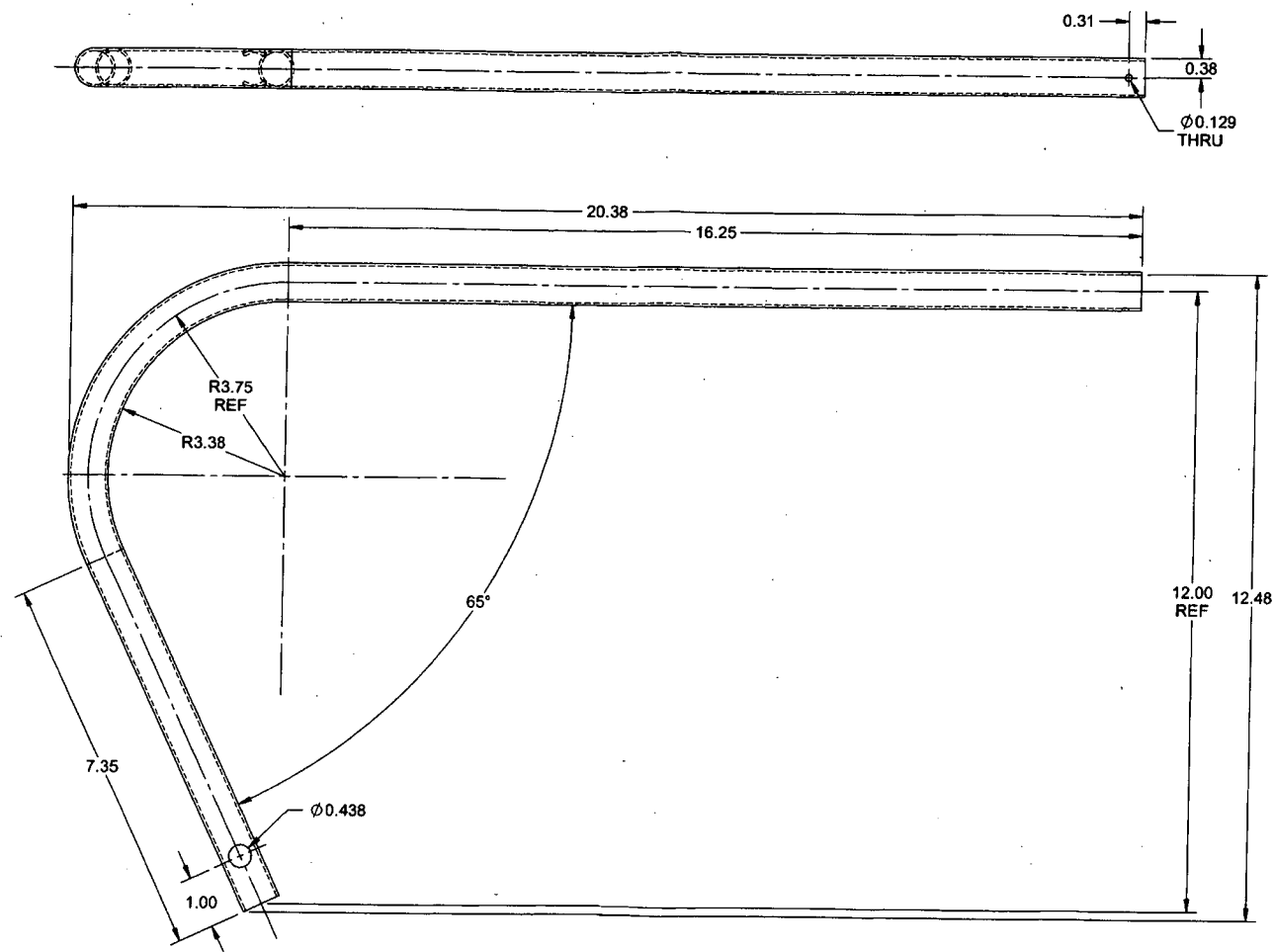
2015 FEB 04

NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: POWDER COAT GREY SANTEX (4.3.5.6) PER DART QSI 005 4.3
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 1.08 lbs
- 8) WELD PER DART QSI 004

APPROVED

DESIGN	AJS	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	AJS		
CHECKED	AP	DRAWING NO.	REV. A
MFG. APPR.	DD	D5189	SHEET 2 OF 3
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	ARMREST COMPONENTS	NTS
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RELEASED

2015 FEB 04

D5189-3 ARMREST

NOTES:

- 1) MATERIAL: AISI 4130N SEAMLESS STEEL TUBING, $\phi 0.750 \times 0.049$ WALL
PER MIL-T-6736 OR AMS 6360/6361/6362/6373/6374
REF M4130NT0.750W0.049
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 0.95 lbs

APPROVED

DESIGN	AJS	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	AJS		
CHECKED	AP	DRAWING NO.	REV. A
MFG. APPR.	DD	D5189	SHEET 3 OF 3
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	ARMREST COMPONENTS	NTS
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